

AOC 2-84.62 Machine Pit Interim Measures Completion Report

Boeing Plant 2
Seattle/Tukwila, Washington

Submitted To:
The Boeing Company

March 2001

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LIST OF ACRONYMS

<u>Acronym</u>	<u>Definition</u>
AOC	Area of Concern
CMS	Corrective Measures Study
EPA	U.S. Environmental Protection Agency
IM	Interim Measure
MTCA	Model Toxics Control Act
PCB	Polychlorinated Biphenyl
PMCL	Preliminary Media Cleanup Level
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation

**AOC 2-84.62 MACHINE PIT
INTERIM MEASURES COMPLETION REPORT**

**BOEING PLANT 2
SEATTLE/TUKWILA, WASHINGTON**

1. INTRODUCTION

This completion report describes an Interim Measure (IM) performed at Area of Concern (AOC) 2-84.62 Machine Pit. This IM was conducted pursuant to an U.S. Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA) Administrative Order on Consent (Order) for The Boeing Company's (Boeing's) Plant 2 Facility in Seattle/Tukwila, Washington.

AOC 2-84.62 is located in the southern portion of Boeing Plant 2 near the southeast corner of Building 2-83 (Figure 1). This area of Plant 2 is being redeveloped, and this IM was completed prior to the Corrective Measures Study (CMS) in order to allow construction of the new buildings to proceed. The IM work focused on soil remediation. Groundwater under this unit was not expected to be impacted based on the limited extent of constituents in soil (WESTON 1997a).

The scope of work for this IM is described in the IM Work Plan (WESTON 2000) provided to EPA. The soil removal approach was verbally approved by EPA on 7 June 2000.

The scope of work consisted of excavating soil to the limits defined by pre-excavation sampling in the immediate vicinity of AOC 2-84.62. Pre-excavation sampling was performed around the locations where polychlorinated biphenyls (PCBs), lead and zinc were found in soil above preliminary media cleanup levels (PMCLs).

2. BACKGROUND

2.1 AOC Description

This unit began operation in the 1940s and has since been decommissioned. It consisted of two machine pits located in the central portion of Building 2-83 that were used to collect oil and metal shavings from parts manufacturing. One pit was located at column B-3, measuring approximately 2 feet by 1 foot by 10 inches deep, which collected cutting oil and metal shavings from a planer machine. The other pit, located at column C-4, measured 8 feet by 2 feet by 6 inches deep.

Soil was sampled near the unit during the RCRA Facility Investigation (RFI) (WESTON 1997b) to determine if a release had occurred and to characterize the nature and extent of the release. RFI sample locations and analytical results are shown in Figure 2. Concentrations of lead, zinc and PCBs in soil exceeded PMCLs in borings SB-08309 (PCBs) and SB-08306 (lead and zinc).

Detailed RFI sample information is provided in the IM Work Plan (WESTON 2000).

2.2 Delineation of Excavation Boundaries

The limits of excavation were determined by further delineating the extent of constituents in soil prior to excavation. Numerous soil samples were collected around the locations where PCBs, lead and zinc were found above PMCLs. These soil samples were collected within a distance of 10 feet of the locations where constituents exceeded PMCLs. The locations of these soil samples and their constituent concentrations are shown in Figure 3 and Table 1, respectively.

As shown in Table 1, lead and zinc concentrations in the delineating samples did not exceed PMCLs. PCBs were not detected in any of these samples.

3. INTERIM MEASURE OBJECTIVES

The objectives of the IM at AOC 2-84.62 were the following:

- Objective #1—Allow construction of new structures and remove soil to the extent that no unacceptable risk to human health or the environment is likely given the proposed use of the facility.
- Objective #2—Complete the IM in anticipation of a final remedy consistent with the outcome of a CMS evaluation of constituents present.
- Objective #3—Remove impacted soil such that no short-term risks occur to workers during construction of the new facility.

4. DESCRIPTION OF WORK COMPLETED

Roy F. Weston, Inc. (WESTON®) prepared a Health and Safety Plan for the construction work.

R.W. Rhine, Inc. performed the construction work. WESTON provided oversight of the construction activities and reported directly to the Boeing on-site field engineer.

Based on the delineation soil data, the excavation boundaries were painted on the existing concrete floor. The excavation boundaries were located outward of the delineating soil sample locations (i.e., the delineating soil sample locations were inside the excavation boundary). The concrete was then cut by a concrete cutting service.

Exclusion zones were setup around the areas to be excavated. All work was performed using Level D personal protection equipment.

The excavation approach consisted of removing soil to the limits of the excavation boundaries. The pre-excavation delineation samples, therefore, serve as the confirmatory samples. It was appropriate to take this confirmational sampling approach due to the defining nature of the boundary-delineation sampling approach and short construction schedule for the new facility.

Excavation began and was completed on 23 June 2000. First, concrete in the PCB-impacted area was broken up and loaded into an awaiting truck designated for PCB soil. Next, the soil was excavated to depth of 5 feet and placed into the truck. Soil was excavated to the edge of the cut concrete creating vertical walls. The excavation was measured in four corners and the middle to ensure proper depth.

When excavation of the PCB impacted soil was completed, work began on the metals-impacted soil. The concrete was broken, removed and placed into a truck designated for metals-impacted soil. Next, the metal impacted soil was excavated to a depth of 5 feet, placed into the trucks, and taken to a staging cell (constructed of pavement, concrete blocks and lined with plastic) and covered. Soil was excavated to the edge of the concrete. The walls of the excavation were vertical. The excavation was measured in four corners and the middle to ensure proper depth.

No unusual odor or staining was observed in the excavated soil or within the excavation. The excavations were then backfilled. The PCB-impacted area excavation was measured at 16 feet long by 16 feet wide. The lead/zinc-impacted area excavation was measured at 17 feet long by 17 feet wide. The excavated area boundaries are shown in Figure 4.

The backhoe bucket was decontaminated between excavation areas. The WESTON site engineer prepared a daily report documenting the work activities discussed in the IM Work Plan. The daily report is being kept with the project file.

5. DISPOSAL

PCB-impacted soil was excavated, placed directly into dump trucks, and disposed of at the Waste Management, Inc. hazardous waste landfill in Arlington, Oregon. On 27 June 2000, the metals-impacted soil in the staging cell was loaded into dump trucks and disposed of off-site. Metals-impacted soil was disposed of at the Columbia Ridge Landfill in Arlington, Oregon.

A summary of the disposal volumes is provided in Table 2.

Decontamination water generated from decontamination of the backhoe bucket was minimal (i.e., approximately 4 gallons). The decontamination water was collected, mixed with its respective soil for dust control, and was disposed of with the soil.

6. QUALITY CONTROL

The limits of excavation were visually verified by the WESTON construction manager. The excavation edges corresponded with the edge of the pavement and encompassed the delineation soil sample locations. The depth of the excavation was measured in all four corners, the middle, and was verified to be a minimum of 5 feet deep.

A completed construction quality control checklist is provided in Appendix A as Table 4.

7. SUMMARY

Work was performed according to the IM Work Plan (WESTON 2000). The final size of the excavations was slightly larger than proposed in the IM Work Plan. All soil planned for excavation was excavated.

The objectives of the IM were achieved:

- Objective #1 was met by removing all impacted soil.
- Objective #2 was met. All soil which exceeded PMCLs was removed. The PCB concentrations remaining at AOC 2-84.62 are less than or equal to 45 µg/kg U (non-detect) which is less than the goal of 330 µg/kg specified in the work plan (WESTON 2000).
- Objective #3 was met by removing soil exceeding Model Toxics Control Act (MTCA) Method C Industrial criteria. MTCA Method C criteria are concentrations that are protective of human health for workers at industrial facilities. The constituents in soil surrounding AOC 2-84.62 are below MTCA Method C concentrations (as shown in Table 3) indicating there is no significant risk to human health.

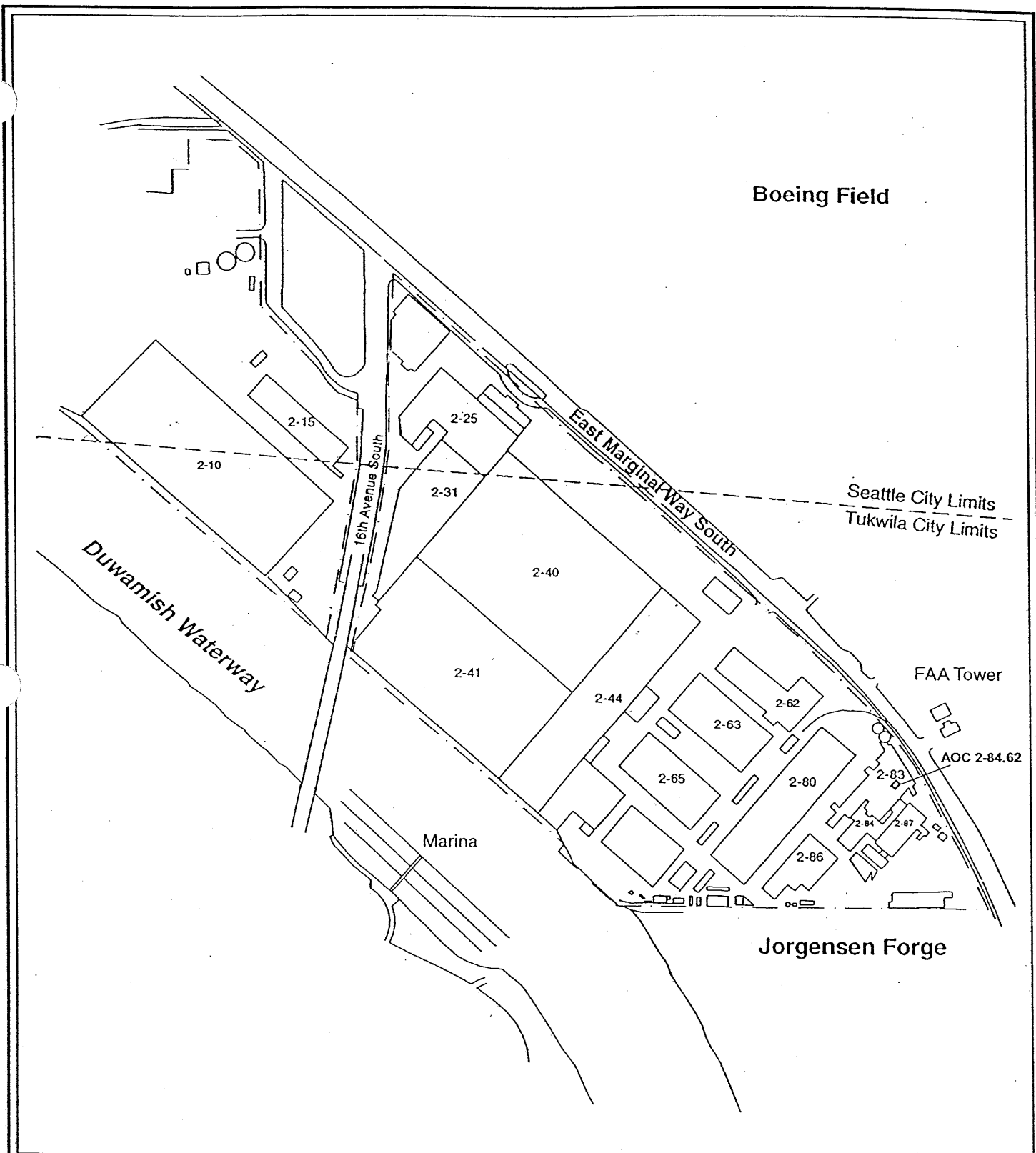
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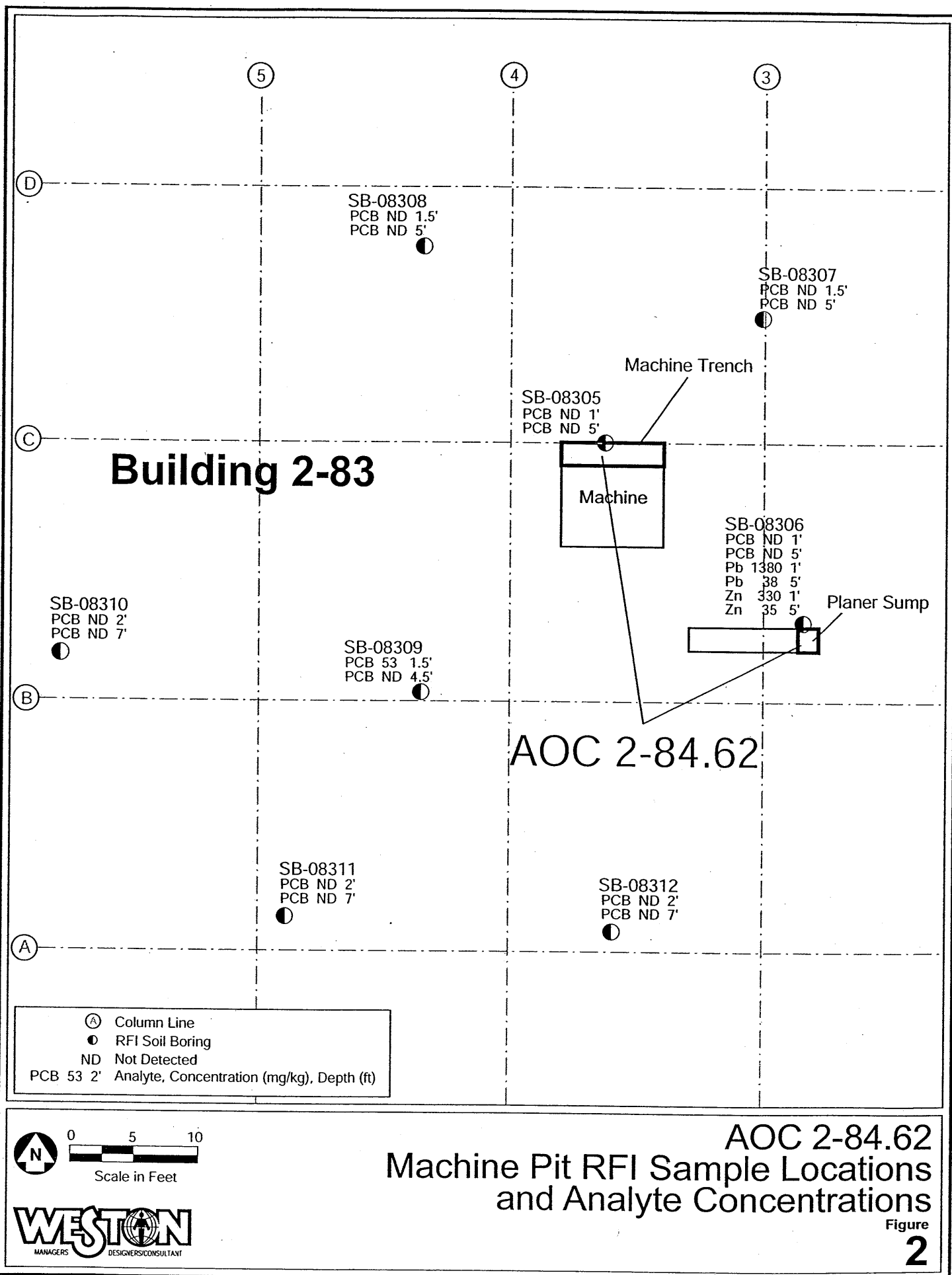
FIGURES

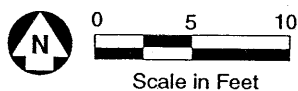
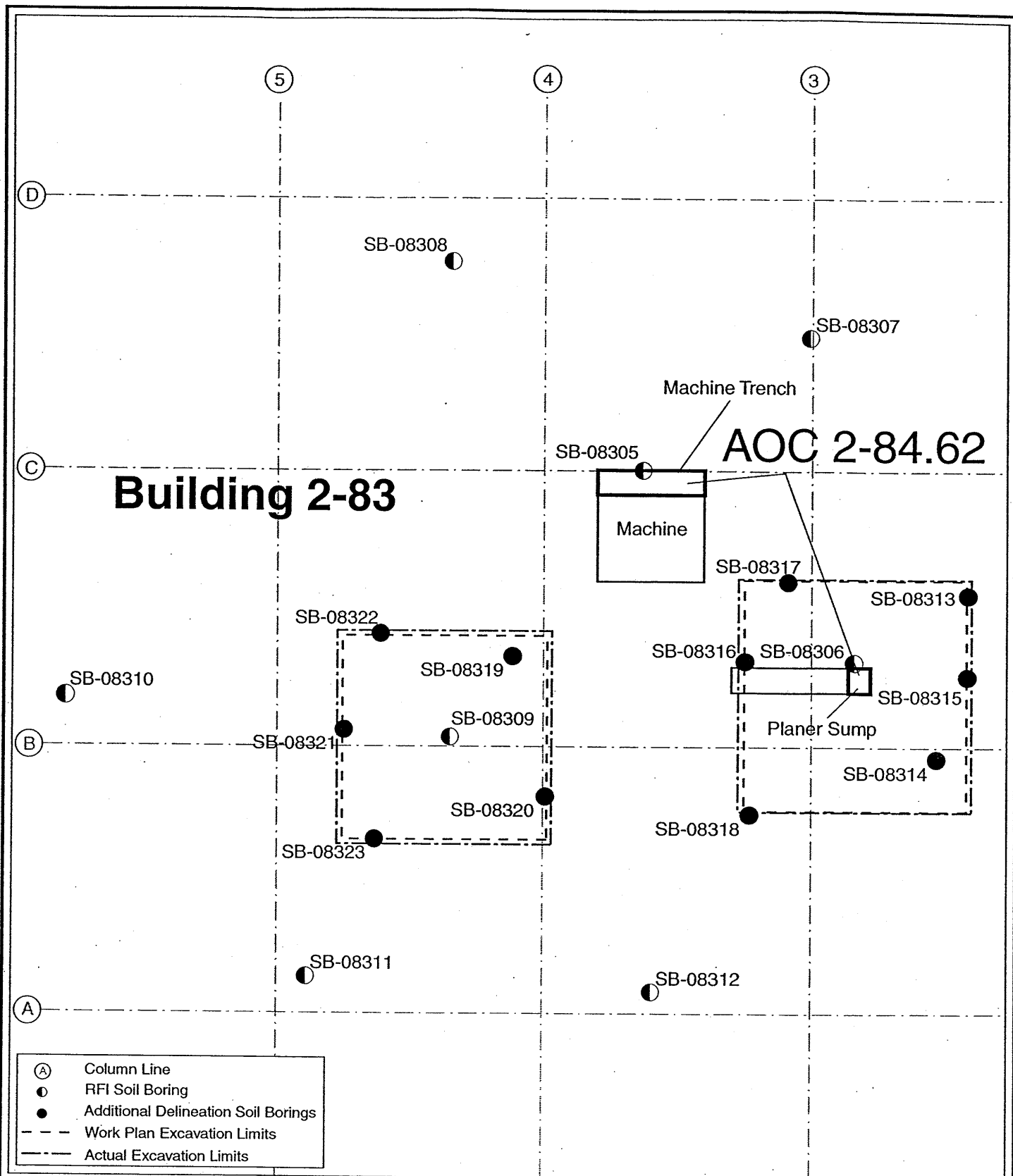


Facility Map



Figure
1





AOC 2-84.62
Machine Pit Excavation Extents

TABLES

Table 1—Delineation Sample Analyte Concentrations

Sample No.	Lead Concentration (mg/kg)		Zinc Concentration (mg/kg)		PCB Concentration (µg/kg)	
	1' Depth	5' Depth	1' Depth	5' Depth	1' Depth	5' Depth
SB-08313	4.4	2.1	42.9	25.0	—	—
SB-08314	6.1	2.5	29.8	26.3	—	—
SB-08315	3.3	2.4	55.8	27.3	—	—
SB-08316	3.1	2.5	34.9	24.4	—	—
SB-08317	3.6	2.7	24.4	24.5	—	—
SB-08318	72.6	3.9	25.2	38.5	—	—
SB-08319	4.9	8.0	31.0	46.7	ND	ND
SB-08320	6.4	11.3	30.1	46.9	ND	ND
SB-08321	—	—	—	—	ND	ND
SB-08322	—	—	—	—	ND	ND
SB-08323	—	—	—	—	ND	ND

Notes: ND: Not Detected
 —: Not Analyzed

Table 3—Analyte Concentrations vs. MTCA Method C Values

Sample No.	Lead Concentration (mg/kg) (MTCA C = NA)		Zinc Concentration (mg/kg) MTCA C = 1.05×10^6 mg/kg		PCB Concentration (µg/kg) MTCA C = 17 mg/kg	
	1' Depth	5' Depth	1' Depth	5' Depth	1' Depth	5' Depth
SB-08313	4.4	2.1	42.9	25.0	—	—
SB-08314	6.1	2.5	29.8	26.3	—	—
SB-08315	3.3	2.4	55.8	27.3	—	—
SB-08316	3.1	2.5	34.9	24.4	—	—
SB-08317	3.6	2.7	24.4	24.5	—	—
SB-08318	72.6	3.9	25.2	38.5	—	—
SB-08319	4.9	8.0	31.0	46.7	ND	ND
SB-08320	6.4	11.3	30.1	46.9	ND	ND
SB-08321	—	—	—	—	ND	ND
SB-08322	—	—	—	—	ND	ND
SB-08323	—	—	—	—	ND	ND

Notes: ND: Not Detected
 —: Not Analyzed
 NA: Not Available

APPENDIX A
QA CHECKLIST

**Table 4—QA Checklist
AOC 2-84.62 Machine Pit**

	Criteria	Inspection Method	Inspected by	Approved (initial)
1. Mark Soil Excavation Area	+/- 1 foot Ensure excavation area includes the delineation soil sample locations	Tape measure	Construction Engineer	AF
2. Soil Manifesting	Per Department of Transportation requirements	visual	Boeing	KGC
3. Spill Prevention	Place plastic between excavation area and loadout truck during truck loading	Visual	Construction Engineer	AF
4. Decontamination	Decontaminate hoe bucket	Observation	Construction Engineer	AF
5. Backfill	As specified by Boeing	Visual- verify before shipment to site	Boeing Engineer	KGC
6. Excavation area and depth	As delineated based on Work Plan Figures	Measure (using tape measure or equivalent). Measure area and depth in opposite corners and 1 location in midsection	Construction Engineer	AF